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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,504	08/05/2003	Bin Yu	H1419	4016

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EXAMINER	
ABRAHAM, FETSUM	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H·A

Office Action Summary	Application No.	Applicant(s)	
	10/633,504	YU ET AL.	
	Examiner	Art Unit	
	Fetsum Abraham	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *15-18* is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☑ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6,7 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: said gate dielectric and gate material being formed on four surfaces of said first fin creates a problem since three surfaces of the active layer of an inverter are available for covering with any type of material such as the claimed gate dielectric and gate material and the fourth unreachable because it is positioned on another layer or substrate.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5,8,9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo et al US2004/0110331 A1.

The document discloses a CMOS structure defined by claims 1 and 8 whereby the first transistor in the CMOS configuration has a fin width different from that of the second in the same configuration on the same substrate. Clearly, the aspect ration of a

given body is a function of its width and length and therefore an inverter with two structures having different aspect ratios is formed on the same substrate of the prior art. The prior art discloses all subject matter claimed but may not have been clear on the immediate substrate where the active layers of the inverter was formed. However, transistors are known to be formed on insulating substrates for one skilled in the art to find it obvious since SOI layers are thinner than bulk substrates thereby offering better current leakage and noise immunity properties.

As for claims 2,3,4,9,10,11 the prior art inverter is composed of NMOS and PMOS in integration and the two types of transistors have different mobilities.

As for claim 5, the prior art shows the claimed structure in the front page where the gates of the transistors are formed on three sides of the gate insulation on the active fins.

As for claim 8, the front-page structure shows the claimed invention such that the gates of the MOSFETs cover three sides of the active channel regions of the same. The insulation layer on the substrate is missing in the structure but the issue has already been addressed in relation to claim 1.

As for claims 12,13, the prior art gates are rectangular fin-gates of the first of the claimed alternatives type.

As for claim 14, transistors are known to be different in size from one another based on many reasons associated with their sizes such as the following:

a) active layer conductance requirements: the larger the active area, the more conductive it is.

b) leakage current tolerance and associated requirements: the larger the active channel, the higher the leakage.

c) the longer the channel region, the higher the gate/channel capacitance and channel/body capacitance at strong inversion mode pf operation.

d) the smaller overall device size, the better the integration.

The above mentioned reasons being few of the many reasons that may influence FIN oriented transistor sizes, said third fin on the substrate has no relationship with the intended inverter of the integrated first two transistors. This examination looks at that element in singularity on a substrate with other independent elements on the same. Therefore, it would have been obvious to one skilled in the art to form a FINFET of any size on a substrate adjacent other elements for any one of the reasons provided above.

Claims 15-18 are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.

Fetsum Abraham
7/8/05